

## Patent Claims

1. Invertible optical microscope which can be assembled as an upright variant or as an inverted variant, comprising a stand (1), a first imaging system comprising an objective and a tube (6), a first illumination system for vertical illumination comprising a lamp (5), a collector, and a condenser, and an object stage (8) which is located below the objective for the upright variant and above the objective for the inverted variant, characterized in that the objective which is enclosed together with a beam-splitting deflecting element for incident light reflection is an objective module (2), in that the enclosed condenser is an illumination module (3), in that the first imaging system for implementing the upright variant is determined by the objective module (2), the tube (6), and a first optical path lying between the tube (6) and the objective module (2) that is mounted above the object stage (8), in that a second imaging system is provided for the inverted variant, which second imaging system is determined by the objective module (2), the tube (6), and a second optical path lying between the tube (6) and the objective module (2) that is mounted below the object stage (8), and in that optical elements present in the first optical path or second optical path are calculated in such a way that an imaging of an object by means of the first imaging system is identical to an imaging of the object by means of the second imaging system.

2. Invertible microscope according to claim 1, characterized in that the objective module (2) has an imaging interface (S3) on the objective module side and an illumination interface (S7) on the objective module side, in that the illumination module (3) has an illumination interface (S6) on the illumination side, in that the objective module (2) communicates with the stand (1) by its objective interface (S3) on the objective module side alternately by means of a top imaging interface (S1) or a bottom imaging interface (S2) to use the microscope alternately as an upright microscope or as an inverted microscope, in that the illumination module (3) is connected to the stand (1) by its illumination interface (S6) on the illumination side alternately by means of a top illumination interface (S4) or a bottom illumination interface (S5) so that, in connection with the lamp (5), it alternately makes available a vertical illumination for the upright variant of the microscope or the inverted variant of the microscope, in that the objective module (2) is fastened to the stand (1) by its illumination interface (S7) on the objective module side by the respective free top illumination interface (S4) or bottom illumination interface (S5), in that a bottom lamp

interface (S8) and a top lamp interface (S9) are provided opposite from the illumination interfaces (S4), (S5), the lamp (5) being attached alternately to this bottom lamp interface (S8) or top lamp interface (S9) in order to outfit both microscope variants alternately with vertical illumination or transmitted illumination, in that the stand (1) is hollow, and the portions of the first imaging system and second imaging system lying between the tube (6) and the top imaging interface (S1) or bottom imaging interface (S2) extend within the interior of the stand.

3. Invertible optical microscope according to claim 2, characterized in that the stand (1) has the shape of a 'C', the first side of the 'C' forms the stand base (13), and the tube (6) is mounted at the second side of the 'C', in that both sides have, at their free end, rectangular recesses which face one another, the oppositely located surfaces in the recesses form the top and bottom imaging interfaces (S1), (S2), and the surfaces perpendicular thereto form the top and bottom illumination interfaces (S6), (S7).

4. Invertible optical microscope according to claim 3, characterized in that it is determined by the optical data indicated in Table 1.

5. Invertible optical microscope according to claim 1, characterized in that the objective module (2) has an imaging interface (S3) on the objective module side and an illumination interface (S7) on the objective module side, in that the objective module (2) is connected to the stand (1) by its illumination interface (S7) on the objective module side alternately by a top illumination interface (S4) or a bottom illumination interface (S5), in that the imaging interface (S3) on the objective module side alternately communicates with a tube-side tube interface (S11) of the tube (6) directly or indirectly by an intermediate tube (12).

6. Invertible optical microscope according to claim 1, characterized in that the objective module (2) is fixedly connected to the stand (1), and the stand (1) is rotated by 180° with its base surface arranged upward in order to invert the upright variant into the inverted variant, in that the objective module (2) has, on the objective module side, an imaging interface (S3) that alternately connects indirectly via a camera tube (14) or an intermediate tube (12) to a tube-side tube interface (S11) located at the tube (6) so that the first optical path is determined by the optical elements of the camera tube (14) which participate in the visually accessible imaging and the second optical path is determined by the optical elements of the

intermediate tube (12).

7. Invertible optical microscope according to claim 2 or claim 5, characterized in that the imaging interfaces (S1), (S2), (S3) and the illumination interfaces (S5), (S6), (S7) are located in parallel beam paths.